PROMOTION OF GERIATRIC HEARING HEALTH IN THE PRIMARY CARE SETTING

by

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As members of the Audiology Doctoral Project Committee, we certify that we have read the project prepared by Jaclyn Tom, titled *Promotion of Geriatric Hearing Health in the Primary Care Setting* and recommend that it be accepted as fulfilling the Audiology Doctoral Project requirement for the Degree of Doctor of Audiology.

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Final approval and acceptance of this project is contingent upon the candidate's submission of the final copies to the Graduate College.

I hereby certify that I have read this Audiology Doctoral Project prepared under my direction and recommend that it be accepted as fulfilling the project requirement.

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ABSTRACT

Hearing loss is a common problem that is affecting the quality of life of approximately one in three people ages 65 and older ("Hearing Loss and Older Adults," 2017). Primary care physicians (PCPs) are typically the first medical professionals to interact with patients that may have hearing difficulties (Johnson et al., 2008). Therefore, PCPs need to have the knowledge and resources to screen hearing and make necessary referrals. Untreated hearing loss in the geriatric population can easily result in a communication breakdown during patient-provider interactions. The aims of this project were to identify providers' perspectives of self-management of hearing loss from two behaviors: 1.) provider behavior; 2.) patient behavior from the provider's point of view. A total of 10 physicians completed structured interviews that were transcribed and coded using the COM-B model. Initial analysis of the structured interviews resulted in 129 capability, 140 opportunity and 102 motivation codes. Based on the number of codes found, it is clear that there is a dynamic interaction in hearing health care in the geriatric population that is influenced by various contributing factors and resources. This study evaluated the patient-provider encounter and identified common facilitators and barriers at the level of policy, insurance, state resources, and social and cultural factors and linked them to patients' and the providers' behavior to demonstrate how all of these factors can have an impact on hearing health care. The findings from this study provide the foundation for the development of a training for PCPs to increase their awareness of hearing loss among the geriatric population and encourage them to screen hearing at yearly medical visits. Developing a hearing screening protocol in the primary care setting can promote a better patient-provider communication and positively improve the quality of life in patients living with hearing loss.

CHAPTER 1

INTRODUCTION

Background Information and Purpose

Hearing loss in the older adult population is a major public health problem. Currently, hearing loss is ranked as the second most prevalent disability and the third most prevalent chronic condition in the United States (Zazove et al., 2017). Hearing loss is one of the most common health conditions affecting older adults. It is estimated that approximately one in three people between the ages of 65 and 74 have a hearing loss, and more than half of individuals older than 75 have difficulty hearing ("Hearing Loss and Older Adults," 2017). Hearing loss can negatively impact the quality of life of individuals experiencing it and that of their families and friends (Danhauer, Celani, and Johnson, 2008).

Universal newborn hearing screening has become the standard of care throughout the nation, in an effort to provide early detection and intervention for infants with permanent hearing loss (Moeller, White, & Shisler, 2006). However, there are limited programs that provide hearing screening to older adults for the purpose of early detection of late onset hearing loss. In most clinical practices, a majority of primary care physicians (PCPs) typically use the single question: "Do you think you have hearing loss?" However, most PCPs are inconsistent in asking their patients that question (Zazove et al., 2017). This is likely due to the demands placed on health care providers. PCPs are very busy treating illnesses, treating/managing patients with more pressing health concerns, and trying to address quality metrics. For example, in the Santa Cruz community, the question, "Do you think you have hearing loss?," in Spanish had a sensitivity of 0.71 and a specificity of 0.46 in determining whether patients subjectively felt they had a hearing loss (Ingram, 2016; Everett et al., (in progress). These values were based on a

95% confidence criteria. Further, a majority of PCPs are unaware that older adults likely experience hearing difficulties and lack an understanding of hearing loss screening, counseling and referral processes (Zazove et al., 2017). PCPs reported that performing a hearing screening during the Welcome to Medicare one-time preventative examination would be beneficial ("The ABCs of the Annual Wellness Visit (AWV);" Danhauer et al., 2008). In addition, many PCPs reported that they would like to receive additional training on hearing screening protocols and the referral process (Danhauer et al., 2008). Furthermore, there are limited resources regarding hearing screening protocols and follow-up referrals for PCPs (Bogardus, Yueh, & Shekelle, 2003).

In order to achieve patient-centered care it is critical that PCPs have good communication with their patients. Older adults with acquired hearing loss may experience greater difficulty obtaining, processing, and understanding important health information from their PCPs; therefore, putting older adults at risk for negative impacts on their health (Wolf et al., 2005). Communication challenges in regard to hearing loss may affect older adults' access to health care, and experience in medical settings (Zazove et al., 1993, 2017). In addition, the quality of communication between patients and PCPs has been proven to be an important factor in patient satisfaction (Mick, Foley, & Lin, 2014). A screening protocol, with adequate support systems in place, would likely create the opportunity for earlier detection and treatment for hearing loss, which may decrease the negative impacts associated with untreated hearing loss. Untreated hearing loss can impair the exchange of information; therefore, impacting daily life tasks, causing loneliness, social isolation, depression, lower income, anxiety, dependence, and frustration (Ciorba et al., 2012; Zazove et al., 2017). Additionally, untreated hearing loss can

also have a negative effect on an individual's quality of life, psychological well-being, and cognition (Ciorba et al., 2012; Zazove et al., 2017).

An analysis of PCP interviews from partnering health clinics will evaluate PCPs' knowledge and attitudes toward hearing health care in the older adult population and the referral process. PCPs' responses were analyzed using the COM-B model, which focuses on capability, opportunity, and motivation (Michie et al., 2011). The COM-B model is a theoretical framework that offers a systematic, comprehensive, and multi-factorial approach to evaluating behavior changes among PCPs.

As the medical home, PCPs are a key player in patient education and may act as gate keepers for patients with newly diagnosed health concerns (Danhauer et al., 2008). PCPs help to provide continuity of care and cohesion for a patient's overall health. They also may be the provider that a patient feels most comfortable with when discussing new medical needs or concerns. This presents an opportunity for screening of hearing health in the primary care setting with the option for appropriate referrals and increased support of patient needs. However, this requires PCPs to be knowledgeable of hearing health including basic information on disorders, communication needs, referral resources, and treatment options. Unfortunately, there is limited information about what PCPs currently know about this topic, what they need to know and how they prefer to learn this information. This research project aims to identify providers' perspectives of self-management of hearing loss among patients based on two major categories: 1.) Primary care providers' thoughts about patients' self-management of hearing loss (perception of patient perspective); 2.) Primary care providers' perspectives of self-management of hearing loss among patients. The data collected will consist of qualitative data from structured interviews with PCPs of partnering health clinics. This project aims to help create a pathway to

an effective partnership with the medical home to better meet the hearing health needs of older adults.

CHAPTER 2

METHODS

Ethics

This study was approved by the Institutional Review Board of the University of Arizona.

Participants

The subject eligibility criteria and number targeted for this study included 10 PCPs and/or Ear, Noise, and Throat (ENTs) physicians who primarily work in the field of geriatrics in the Santa Cruz community within the state of Arizona. This study included eight PCPs and two ENTs. The two ENTs were interviewed due to connections that PCPs had with local ENTs that serve the local population. Physicians were recruited from established relationships with a Rural Federal Qualified Community Health Center (FQHC). A FQHC is defined as a community-based health care center that is given federal funds from the Health Resources & Services Administration (HRSA) Health Center Program to deliver health care services to underserved populations ("Federally Qualified Health Centers," 2018). Participants were excluded from the research study if they were not PCPs or ENTs, or if they did not work in the state of Arizona.

Materials

The Questionnaire. The questionnaire was prepared in advance and given to all physicians in the same order. The questionnaire consisted of eight open-ended questions. The topic areas of the questions related to physicians' knowledge of the prevalence of hearing loss within the geriatric population, communication strategies, barriers that patients encounter seeking health care, resources available to help integrate better hearing health care, and how family members motivate patients to seek hearing health care. The questions used during these physician interviews are listed below:

1) How much of an issue do you think hearing loss is for [your] patients?

2) Do you do any type of screening for hearing loss?

3) What actions do you take when you believe a patient is experiencing a hearing loss?
(Probe: change your communication; referral)

4) How do you think [your] patients perceive hearing loss issues in general?

5) Do you think patients typically seek care when they experience a hearing loss?

a. If yes, what encourages them to seek care?
(Probe: family members, CHWs community members, priest or minister)

b. If no, why not?

6) In your opinion, typically how engaged are family members in the care of patients with hearing loss?

7) What are barriers that patients face when they are seeking care for hearing loss?
(Probe; within [your clinic], in the health care system, in the community)

8) What changes would you recommend at [your clinic] to better care for patients with hearing loss?
(Probe: services offered, screening processes, staffing)

Procedure

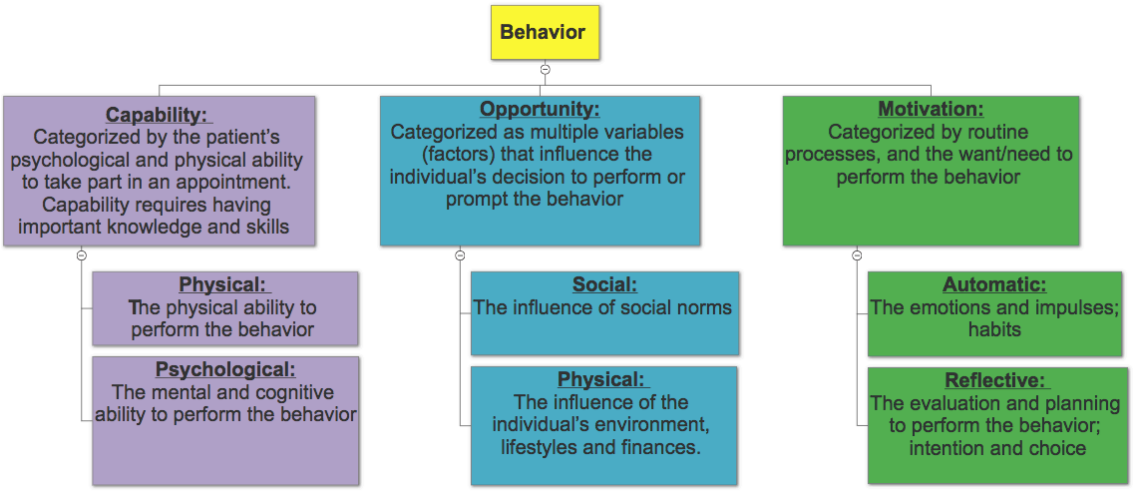
This project used data that was previously obtained during structured interviews in the Santa Cruz community. The interviews were conducted one-on-one, which included the interviewer and the physician. The physicians consented to audio recording during the interview. All of the interviews were recorded then transcribed.

COM-B Framework

For this study, the traditional COM-B framework was used, which includes capability, opportunity, and motivation. Each COM-B component was defined and sub-categories were identified with specific definitions (figure 1). Capability was defined as the patient's psychological and physical ability to take part in the appointment. Capability also implies

having knowledge and skills. Capability is broken down to categorize physical and psychological factors. Physical factors refer to the physical ability to perform the behavior and psychological is outlined as the mental and cognitive ability to perform the behavior. Opportunity was characterized by many factors influencing an individual's decision to perform the behavior. Opportunity is then divided into social and physical. Social is described as social norms, whereas, physical is defined as individual environment, finances and lifestyle. Lastly, motivation is defined as the want and need to perform the behavior. Motivation is then sub-categorized into automatic and reflective. Automatic is defined as impulsive and habitual behaviors. Reflective is defined as planning to perform the behavior. Michie et al. (2011) explained that individuals need capability (C), opportunity (O) and motivation (M) to take part in a behavior (B); therefore, the COM-B model was developed to help understand individuals' behaviors in context and create behavioral goals as a foundation for intervention design (Barker et al., 2016). This framework evaluated two behaviors: 1.) provider behavior; 2.) provider perception of patient behavior.

Figure 1. *The traditional COM-B model with definitions.*

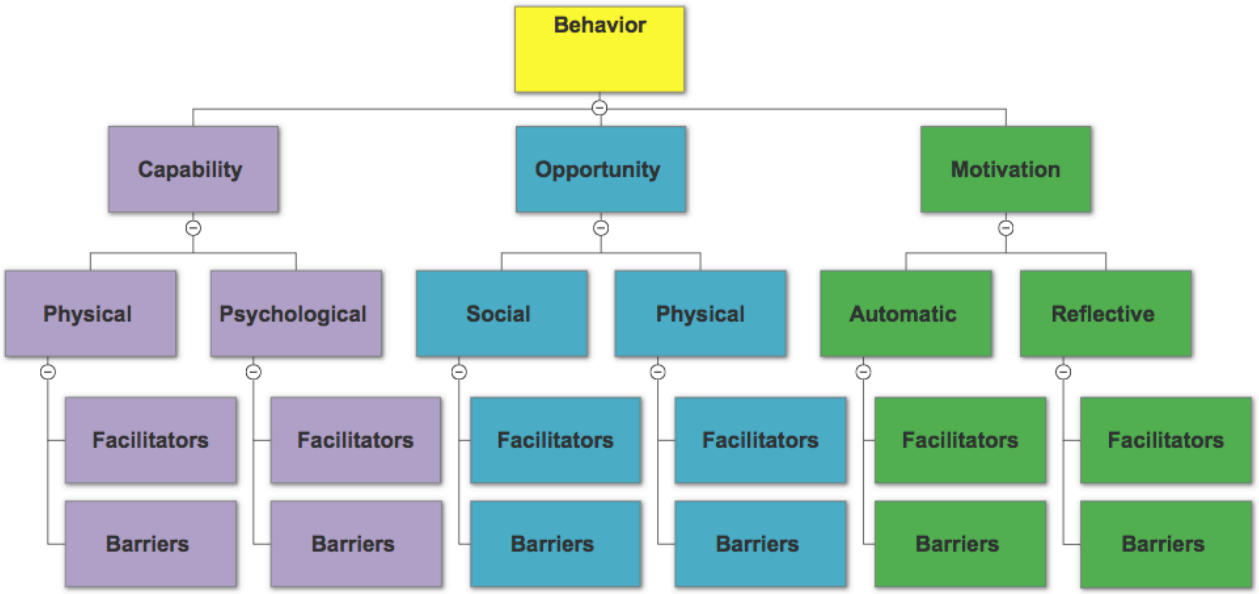


Michie et al. (2011); (Barker et al., 2016)

COM-B Facilitator and Barrier Definitions

In addition to the traditional COM-B model, facilitators and barriers were added to each sub-category (figure 2). Capability physical facilitator was defined as the use of good communication strategies and access to transportation; whereas, a physical barrier was noted as an untreated hearing loss that prevents the reception of information. Capability psychological facilitator was characterized as the awareness of the prevalence of hearing loss among older adults and understanding the importance of audiologic evaluations and a treatment plan. Capability psychological barrier was described as a lack in knowledge about local resources and unawareness of the prevalence of hearing loss.

Figure 2. *COM-B model with facilitator and barrier sub-categories.*



Data Coding

The qualitative data (PCPs interviews) were coded and analyzed using NVivo 10 software. The provider interviews were assessed using a created COM-B code book with definitions related to audiology. This coding method allowed us to evaluate provider management of hearing loss and providers' thoughts about patients' self-management of hearing loss. The diagram shown above (figure 2) demonstrates how the data were coded and analyzed.

The transcripts were coded individually by two independent coders. The two coders then compared their coded transcripts and resolved all discrepancies through discussion. An agreement criteria was based on a Cohen's kappa value .80 or higher. This agreement criterion was established prior to data coding.

Cohen's Kappa

The kappa statistic is frequently used to evaluate inter-rater reliability. Cohen's kappa is typically used to evaluate agreement between two independent coders because it accounts for the possibility that coders guess on some variables due to uncertainty (McHugh, 2012). Cohen's kappa is interpreted based on a kappa value, which results in an agreement level and a data reliability percentage (Table 1). The Cohen's kappa can range from 0-1, where 0 refers to the amount of agreement at random chance, and 1 signifies perfect agreement between two coders. McHugh (2012) explained that inter-rater agreement should have a strong agreement (.80-.90) to almost perfect agreement (above .90), which would align with 64-100% data reliability.

Table 1. *Interpretation of Cohen's kappa.*

Kappa Value	**Agreement Level**	**Data Reliability (%)**
0-.20	None	0-4%
.21-.39	Minimal	4-15%
.40-.59	Weak	15-35%
.60-.79	Moderate	35-63%
0.80-0.90	Strong	64-81%
Above .90	Almost perfect	82-100%

(McHugh, 2012)

CHAPTER 3

RESULTS

General Overview

There were 10 physicians (eight PCPs and two ENTs) who participated in a structured interview. All of the physicians had work experience with the geriatric population. Overall, the interview responses showed consistency among most physicians. All of the interview responses were coded and grouped into their relating category such as capability, opportunity and motivation. Of the 10 physician interviews completed, there were 129 capability codes, 140 opportunity codes and 102 motivation codes. The provider interviews investigated the following behaviors: 1.) Providers' behavior, specifically PCPs' perspective of self-management of hearing loss among patients; 2.) Patient behavior, PCPs' thoughts about patients' self-management of hearing loss.

Findings for Capability

For aim one, the common themes that were found for provider behavior were communication strategies and knowledge about hearing health care treatment and interventions. A common physical facilitator that was found was that some physicians speak at a slow rate and use written communication to promote better communication during their patient-provider encounters. The physicians reported that sometimes they modify their communication method to assist patients in understanding the main message of the medical appointment.

> *"You tend to speak a little bit louder. You try and lower your voice a little bit to make it easier for them to hear. That helps."*

"We have one patient who is very hard of hearing…he yells and we tend to communicate by writing."

"I become more animated and I try to enunciate better. Sometimes they're still not interested in listening to me."

"I try and speak to them slowly and that way they can read my lips."

However, this was also noted to be a physical barrier, as some physicians did not see the value in rephrasing the message to the patient. As some PCPs said:

"I have to shout to them. They don't hear me."

"With some patients, you just have to try to talk louder…because otherwise I don't know if the message is getting across."

"We have patients that have difficulty hearing, which makes it difficult to communicate with them."

"Well I just raise my voice to communicate. It's mostly elderly patients that we have to speak louder…I talk to them and they don't listen to me."

With regards to psychological facilitators, for aim one, PCPs were found to have general knowledge about the prevalence of hearing loss in the geriatric population. The comments below illustrate some psychological facilitators that physicians are aware of:

"I know about the general signs and symptoms of hearing loss and the treatment options …and what the long term ramifications are with that."

"I'm aware that it exists and that it is a problem for some people, and a lot of people won't bring it up."

However, some PCPs lacked knowledge about hearing loss, management/treatment options, and resources available. The responses below describe the psychological barriers that surfaced through the interviews:

"Hearing loss, it's no problem."
"I would like to know how many people have hearing loss and how big of a problem it is. I would also like to know what intervention options are available."
"I don't think my patients have a hearing loss because they do not say anything to me."

As for aim two, the researchers noticed that PCPs perceived transportation to be a physical barrier and lacking emotional support for family members to be a psychological barrier for patients trying to access audiologic health care. For example, some PCPs said:

"Some people have a problem because of immigration. They can't get past the check point. They have to do everything down here; they can't go north."
"Some people do have transportation issues around here. I know we do have transportation for certain patients but there's a limited amount of what we can do because depending on how many people need transportation."
"Sometimes, they have to be sent to Tucson and a lot of the people here have transportation problems."

Box 1 shows an overview of the common themes found for capability.

Box 1. *Capability Behavioral Influences.*

Capability		
	Physical	**Psychological**
Aim 1: Provider Behavior	**Facilitators:** Some PCPs reported that they try to speak at a slower rate, enunciate, and use written communication **Barriers:** Some PCPs explained they do not see the benefit in frequently repeating or rephrasing the message to the patient.	**Facilitators:** PCPs are aware of the prevalence of hearing loss among older adults and understand the importance of an audiologic evaluation. **Barriers:** PCPs reported that they lack knowledge about hearing loss, treatment/management options and local resources.
Aim 2: Patient Behavior	**Facilitators:** PCPs found that when local providers were available, patients did not face transportation barriers. **Barriers:** PCPs noticed that transportation prevents patients from obtaining audiologic care.	**Facilitators:** PCPs explained that patient's who understand that they have a hearing loss will typically see the benefit of obtaining an audiologic evaluation. **Barriers:** PCPs reported that patients who are lacking emotional support from their families do not see the value in obtaining audiologic care.

Findings for Opportunity

The common theme that was found for aim one, provider behavior, was the use of a hearing care plan. A shared view amongst interviewees for a social facilitator was that PCPs try to ask patients about their hearing. As one physician said:

"well, we have routine meetings twice a month, in fact this morning is one of those an all provider meeting, the first Tuesday for adult medicine we meet and the director discusses things, so that might be good for him to remind us, don't forget to check about people's hearing problems."

As for social barrier, a frequent topic that was identified was that PCPs do not see the value in checking patients' hearing. One physician commented:

"You could have a hearing screening program, but is it going to make a difference and I don't know that it would. Okay you have 20% hearing loss, great, you know, what you are going to do with? You got 50% hearing loss, what're you going to do with that? Turn down background noise, avoid further acoustic trauma, are you going to tell that to patients, are they going to listen to you?"

In regards to physical facilitators, the interviews showed that most physicians were open to having their medical staff learn and perform hearing screenings. For example, a few PCPs noted:

"Perhaps more screening. Starting to screen at a certain age."

"An early screening program to see if an intervention would make a difference.

"My medical assistants could ask patient's about their hearing while they are waiting in the waiting room."

However, most of the support staff in physicians' offices are not trained to screen hearing and do not have the tools necessary to perform hearing screenings; therefore, this was identified as a physical barrier. As some physicians explained:

"We don't do hearing testing here. We don't have the equipment to do hearing testing."

"My staff and I are not trained in this area."

If we now turn to aim two, patient behavior, the researchers noticed that PCPs perceived family members, insurance, and finances to be either a facilitator or a barrier obtaining hearing health care. For example, some physicians' reported:

"It can be frustrating for the family members too."

"The spouse or the children get frustrated when the patient can't hear them and the family members start screaming and then the patient gets mad."

"Socioeconomics and cultural beliefs are the real barriers."

"Health insurance can influence if my patient can get a hearing evaluation and amplification."

The themes identified in these responses in regards to opportunity are presented in Box 2.

Box 2. *Themes related to opportunity level and their behavioral influences.*

Opportunity		
	Social	**Physical**
Aim 1: Provider Behavior	**Facilitators:** PCPs explained that they try to remember to ask patients about their hearing during their visits. **Barriers:** Some PCPs stated that they do not understand how checking patients hearing will influence patient's quality of life.	**Facilitators:** PCPs reported that their support staff could perform hearing screenings and/or ask patients about their hearing. **Barriers:** PCPs explained that their support staff is not trained on hearing screening protocols and that their practice does not have a referral plan in place.
Aim 2: Patient Behavior	**Facilitators:** PCPs found that patients with supportive family members are more likely to pursue hearing health care. **Barriers:** PCPs noted that some family members do not accommodate the communicative needs of patients.	**Facilitators:** PCPs reported that patients with the financial means to pursue audiologic testing were more likely seek hearing health care. **Barriers:** PCPs found that finances and insurance coverage were preventing patients from obtaining hearing health care.

Findings for Motivation

In regards to aim one, the recurrent theme identified was that physicians would like to take part in a hearing health care plan. A frequent automatic facilitator that was identified was that some PCPs have the desire to develop a hearing health plan; whereas, some PCPs believe that hearing loss is a part of aging and they do not believe that there is an effective treatment option for hearing loss. As one PCP explained:

"We would love to support a hearing screening procedure…. We would love to participate."

As for reflective facilitator, a common topic that was noted was that PCPs want to develop a hearing health plan. As some physicians said:

"Yeah. If you have an intervention that's going to make a difference, then great, let's have a hearing screening program and screen all the older patients."

"I am committed to it and let's get moving…I think we can make a huge impact that way."

In contrast, the common theme that was identified among reflective barriers was that PCPs do not believe that there is an effective treatment option that will help older patients.

"It's going to be very, very, very expensive to get this problem figured out and even more expensive to solve it."

"You could have a hearing screening program, but is it going to make a difference and I don't know that it would."

Next, for aim two, it was found that most of the PCPs interviewed perceived social networks to be either a facilitator or a barrier. Data coded under automatic facilitator found that patients with an active social life are likely to follow-up with recommendations. In addition, data codes under automatic barrier found that patients who do not actively participate in social events will not seek hearing health care. One physician reported:

"Patient's with a strong family support system likely seek follow-up care."

The next sub-category, reflective facilitator, indicated that when patients understand their hearing loss they understand the value in obtaining audiologic care. PCPs explained that some patients with hearing loss would ask for repetition and relied on visual cues during appointments. As one physician put it:

"I think the biggest thing would be to have an acceptance of amplification. I think that's the number one thing that diagnostic things are available and you can be helped and there are a variety of ways that it can be done. So I think that's the number one thing that people need to have a cultural shift on."

The frequent theme identified for reflective barrier was that patients who think their hearing is fine typically do not see the value in a hearing evaluation. For example, some physicians said:

"Patient's tend to ignore the fact that they can not hear."

"I think that with anything like that there's going to be patients who are complying with it and patients who aren't."

"They gradually lose their hearing and they think it's other people's problems and they're not really the realization does not dawn that oh I got a problem here and I've gotta go do something about it."

Box 3 presents a summary of the themes identified for motivation.

Box 3. *Motivation Behavioral Influences.*

Motivation		
	Automatic	**Reflective**
Aim 1: Provider Behavior	**Facilitators:** PCPs explained that they want take part in a hearing health care plan to help patients hear better during appointments. **Barriers:** PCPs reported that hearing loss is a common result of aging and it's not a health concern.	**Facilitators:** PCPs reported that they are willing to take a role in a hearing health care plan. **Barriers:** Some PCPs reported that they do not believe there is an effective intervention to treat hearing loss.
Aim 2: Patient Behavior	**Facilitators:** PCPs reported that patients with an active social network are more likely to follow-up with recommendations. **Barriers:** PCPs noted that patients who do not participate in social events are less likely to seek hearing health care.	**Facilitators:** PCPs explained that once patients accept their hearing loss they will likely see the value in obtaining an audiologic evaluation. **Barriers:** PCPs reported that some patients do not see the value in obtaining an audiologic evaluation.

CHAPTER 4

DISCUSSION

The primary purpose of this research was to evaluate two specific behaviors from the perspectives of PCPs within the COM-B model: 1.) provider behavior; 2.) patient behavior. Provider behavior primarily focused on the PCPs' perspectives of their role in the management of hearing loss; whereas, patient behavior focused on PCPs' thoughts about their patients' self-management of hearing loss.

Based on the findings of this study, for capability some providers felt that communication strategies and general knowledge about hearing loss was a facilitator while others considered them a barrier for capability. According to Zazove et al. (2017), communication difficulties due to hearing loss may negatively influence the geriatric population's access to health care and prevent them from obtaining adequate clinical care. Previous research by Mick et al. (2014) explained the verbal interaction between the patient and the provider has been shown to be an important characteristic in patient satisfaction. As for patients, providers noted that transportation and family support were considered the major themes for capability.

This investigation on providers' behaviors and thoughts about patients' self-management of hearing loss (aim 1) has shown that PCPs try to ask patients about their hearing, but sometimes PCPs do not see the value in this. Additionally, it was found that some PCPs are open to having support staff perform a hearing screening on patients. According to Wallhagen & Pettengill (2008), PCPs reported that nurses can assist in screening patients for hearing loss during routine office visits. The investigators noted that this protocol would significantly improve communication, enhance patient quality of life and help their cognition. However, some physicians explained that their staff would need more training on hearing screening

protocols. The literature from Johnson et al. (2008) demonstrated that the common reason that most physicians do not perform hearing screenings at yearly medical visits were time due to time constraints and having to deal with more pressing health issues. In addition, many physicians reported that they lacked knowledge about when to refer to an audiologist (Johnson et al., 2008). As for patient behavior, this study identified insurance, finances, and family support as a facilitator in some cases and a barrier in others. Research conducted by Donahue, Dubno and Beck (2010) reported that most health care insurance companies including Medicare do not cover amplification devices and that the companies that do, typically only pay for a portion of the expense. The investigators note that many older adults who are uninsured with hearing loss rely on hearing aid banks, the Lions Club and other programs (Donahue et al., 2010). Developing a hearing health care plan with recommendations and referral resources for geriatric patients in the primary care setting emerged as a motivational predictor of how PCPs can help enhance their patients' daily communication skills. Contrera and Wallhagen (2016) developed a flowchart for the evaluation and management of hearing loss in the primary care setting. Additionally, these researchers provided PCPs and their staff with a training on communication strategies for patients with hearing loss. They also created a chart with basic communication strategies that could be given to patients that complained about their hearing difficulties to enhance their overall communication (Contrera & Wallhagen, 2016). Furthermore, that study found that patients who understand and accept that they have a hearing loss and are socially active will likely follow-up with audiologic care compared to individuals who do not participate in group social events.

Another important finding of this study was that some providers explained that they would like to implement a hearing health care plan and some providers stated that they do not

believe that there are treatment options for geriatric patients with hearing loss. This finding was also reported by Johnson et al. (2008), who stated that physicians that act as gate keepers and perform an initial hearing screening can lead geriatric patients towards receiving a timely diagnosis and treatment of hearing loss. With proper training, PCPs can provide patients with basic information about hearing loss and provide encouragement for patients to seek further audiologic care. These researchers explained that having a hearing health care plan in place will help avert the negative impacts of hearing loss on older patients and their families (Johnson et al. 2008).

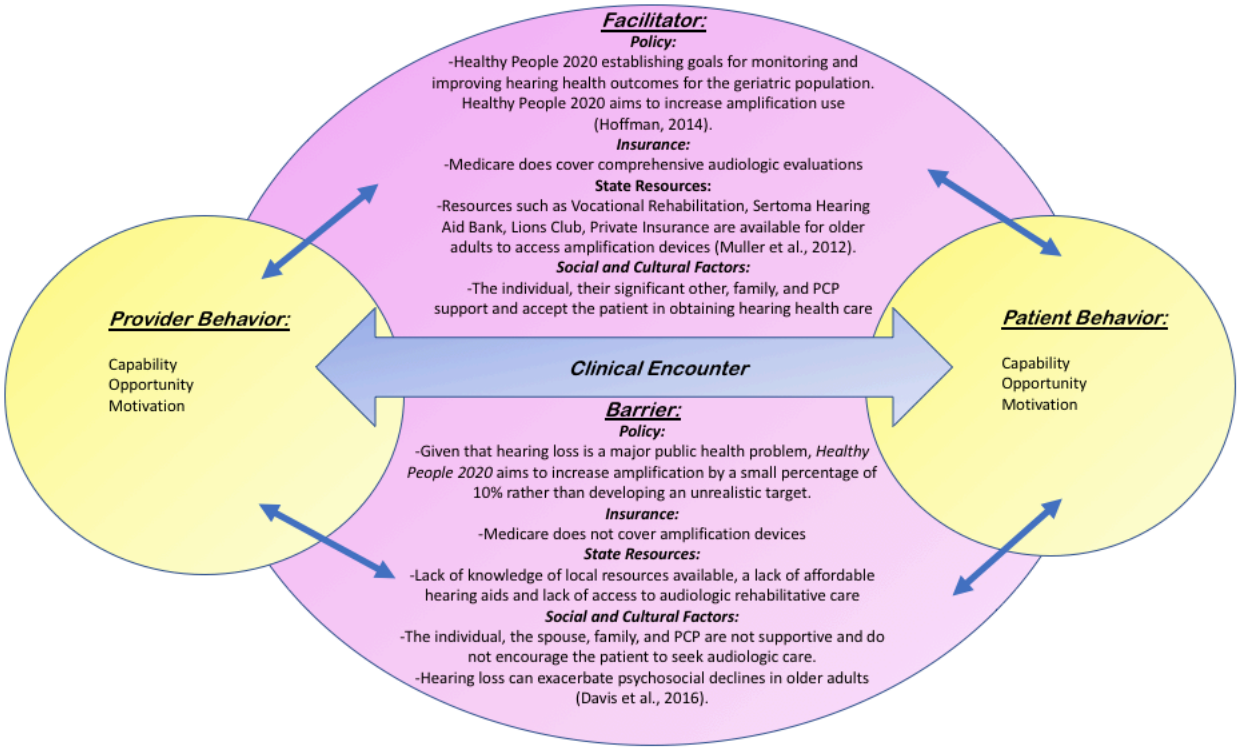
Contribution of study

The COM-B model allowed for a linkage of particular components to intervention plans. Evaluating PCPs' perspectives using the COM-B model assisted in determining areas of geriatric hearing health care that need improvement. This also allowed for a direct response to local needs and improvement of the current hearing health care delivery model.

Findings

The results of this study suggest that shared decision making between the patient and the provider is not happening due to barriers that come up in both patient and provider behaviors in their management of hearing loss. These findings can easily be linked to health care access and evidence based practice. This study found that there is a need for more research that recognizes both patient and provider perspectives when developing consistent clinical recommendations. There is a dynamic interaction in hearing health care in the geriatric population that is influenced by many contributing factors and resources. Figure 3 as shown below, illustrates this clinical patient-provider encounter and the facilitators and barriers that influence access to hearing health care.

Figure 3. *The clinical patient-provider encounter with common facilitators and barriers that have an impact on hearing health care.*



In reviewing the literature, Hoffman (2014) reported that the *Healthy People* program aims to promote disease prevention of various health conditions, but can often be vague. However, Hoffman explained that the *Healthy People* program has helped develop health goals such as hearing health care at the state and local levels. The investigator noted that *Healthy People 2020* aims to increase hearing aid, assistive listening device, and cochlear implant use in individuals with a hearing impairment. The *Healthy People* tracking system has allowed researchers to monitor the progress made toward meeting objectives such as hearing health care over time through various categories like race or ethnicity, socioeconomic status, gender, location, and disability status. This program can be especially helpful in tracking and improving hearing health care outcomes for geriatric patients (Hoffman, 2014). The goals created by the *Healthy People* program can be a facilitator in the clinical encounter by providing physicians

with the opportunity and motivation to take part in a hearing health care plan. Although this program helped establish hearing health care goals, it only aims to increase amplification uptake and use by 10%, which can be noted as a barrier within the clinical encounter (Hoffman, 2014).

As for Medicare, the current hearing health care coverage only includes a comprehensive audiologic evaluation, and diagnostic vestibular exam when a referral is written by an individual's PCP ("Your Medicare Coverage", 2018). Medicare does not provide any coverage for hearing aids, assistive listening devices and hearing aid fitting services ("Your Medicare Coverage", 2018). It is a clinical facilitator that Medicare covers diagnostic audiologic evaluations that provide patients with the opportunity to learn about their hearing status which can potentially motivate them to use better communication strategies and amplification; however, while Medicare can be a facilitator, its lack of hearing aid coverage also makes it a barrier as patients are burdened with covering the full cost themselves. Therefore, Medicare is both an opportunity and motivation barrier for patients. The limited Medicare coverage could potentially be a reason why some physicians believe there is no value in hearing screenings and reasonable treatment options available for older adults.

There are some state resources available within the state of Arizona for the geriatric population that can help patients obtain affordable hearing aids, free hearing aids, or donated hearing aids (Muller et al., 2012). However, some PCPs may be unaware of these programs and therefore do not see a reason to screen their patients' hearing and refer them for audiologic testing. Informing PCPs about these programs may increase their motivation to screen patients' hearing and refer patients for audiologic care knowing that there are resources available. Additionally, informing PCPs about state resources can allow providers an opportunity to

develop a hearing screening protocol within their practice, which would improve the clinical patient-provider encounter.

Furthermore, as shown in the clinical encounter above, social and cultural factors can be a facilitator in the clinical encounter because patients may have support from their families and their physicians for seeking audiologic care and using hearing aids. This would help improve the communication between patients and physicians during medical appointments and help patients comprehend important medical information. It would also improve patient quality of life and encourage participation in social activities. Social and cultural factors can also be a barrier in the clinical encounter because some patients may have family members that do not accept the disability or accommodate patient needs. Families may also shame individuals about their hearing loss or may be ambivalent to the negative impacts that are associated with hearing loss (Davis et al., 2016).

Strengths

A strength of this study was the engagement of partnering health clinics. During the structured interview process, local providers were actively involved in participating and answering questions regarding hearing health care in their daily practice.

Limitations and Future Research Needs

Although the findings from this study provide a starting point for further community-involved research, this current study has a few limitations. The sample size of this study was small with 10 participants; therefore, the effect size and generalizability of this study to other geographic areas should be further evaluated.

The results provide evidence for the design and implementation of a training for PCPs and their medical support staff that focuses on the following: hearing health, disorders,

communication needs, management/treatment options, referral resources, and the Americans with Disabilities Act (ADA) guidelines. Additionally, some next steps include developing a screening protocol with support systems. This could potentially help with earlier detection of and treatment for hearing loss that may reduce negative impacts related with untreated hearing loss. Likewise, it would also be important to develop a treatment plan between patients, PCPs, and audiologists. This collaboration between patients and providers will help narrow the gaps in obtaining hearing health care in the geriatric population.

Clinical Implications

Given that more than half of individuals older than 75 have difficulty hearing, it becomes increasingly important that PCPs obtain the necessary knowledge, capability, opportunity and motivation to acquire the behavior to work with patients with hearing loss. PCPs are typically the first health care professionals to see geriatric patients having a hearing problem (Johnson et al., 2008). PCPs can bridge the gap in hearing health care by screening patients hearing at annual medical check-up appointments and having a referral plan in place. Hearing screenings in the primary care setting have been shown to significantly improve patient communication, quality of life, and cognition (Wallhagen & Pettengill, 2008). Audiologists, as hearing health care providers, can help provide education and referral pathway for the evaluation and management of hearing loss in the primary care setting (Contrera & Wallhagen, 2016).

The promotion of hearing health care in the primary care setting through training and education is an opportunity for PCPs to positively influence a patient's daily communication and motivate PCPs to improve patients' quality of life (Contrera & Wallhagen, 2016). Providing PCPs with hearing health care resources will help reduce the lack of knowledge they have regarding the "where to refer" and "when should patients be referred to an audiologist".

This study demonstrates that some PCPs do not modify their communication strategies with patients with hearing loss. It was also found that some PCPs do not see the value in performing a hearing screening protocol. Additionally, most PCPs do not have screening protocols or a referral plan and/or available resources for patients. The development of a training for PCPs to increase their awareness of hearing loss within the geriatric population could encourage them to screen their patients' hearing at their yearly medical visits. Overall, the earlier detection and treatment for hearing loss may decrease the negative impacts associated with untreated hearing loss. Implementing better communication strategies, a screening protocol and a referral plan in the primary care setting will promote a better patient-provider interaction that will lead to patients being able to interpret the provider health recommendations and allow patients to have an improved quality of life.

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